Cannabis Use and Cannabis Use Disorder: *Current Trends in a Changing Landscape*

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September 20, 2023

2023 Recovery Summit

Disclosures

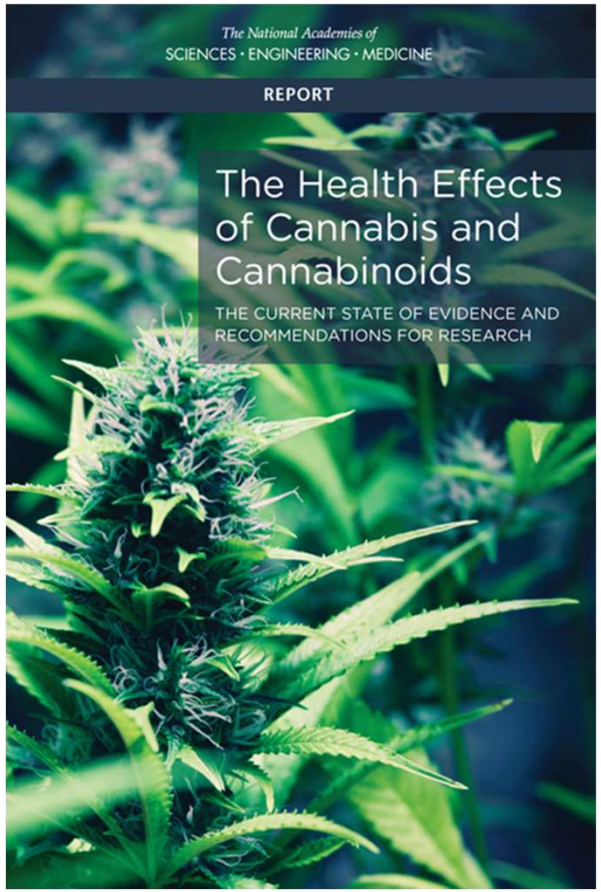
No Disclosures of Financial Relationships Related to this Activity

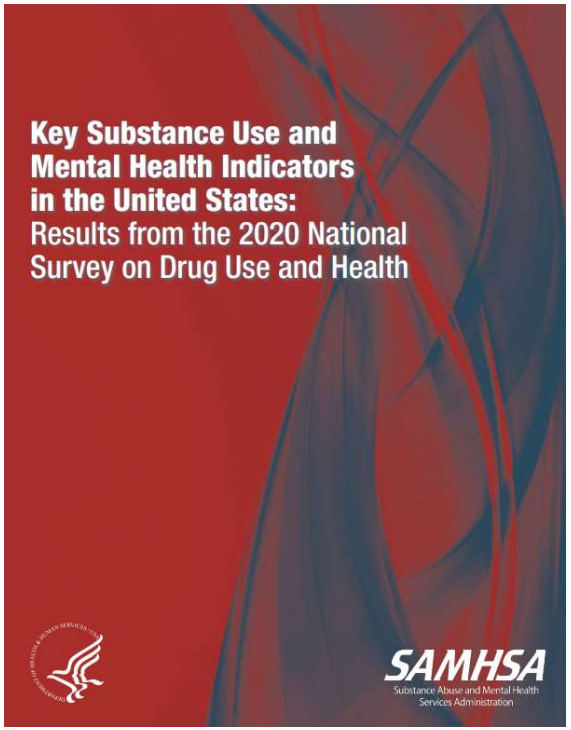
Day Job: University of Michigan
Michigan Innovations in Addiction Care, Research, and Education (MI-ACRE)

Grants funded by NIAAA & NIDA

Consulting for *Prevention Strategies*

Key sources





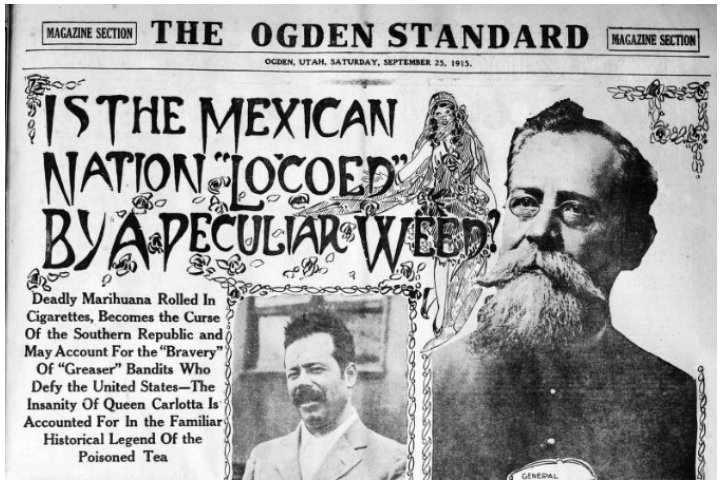
Connor JP, Stjepanović D, Le Foll B, Hoch E, Budney AJ, Hall WD. Cannabis use and cannabis use disorder. Nature Reviews Disease Primers. 2021 Feb 25;7(1):1-24.

Key disclaimers

- The most ‘up to date” data are a few years old
- Expertise in psychology/psychological and behavioral impacts, not physical health aspects of THC consumption, medical cannabis, etc.

Why not “marijuana”?

- Term rooted in prohibition era propaganda that promoted racism and xenophobia


MAGAZINE SECTION THE OGDEN STANDARD MAGAZINE SECTION

OGDEN, UTAH, SATURDAY, SEPTEMBER 25, 1915.

IS THE MEXICAN NATION "LOCOED" BY A PECULIAR WEED?

Deadly Marihuana Rolled In Cigarettes, Becomes the Curse Of the Southern Republic and May Account For the "Bravery" Of "Greaser" Bandits Who Defy the United States—The Insanity Of Queen Carlotta Is Accounted For In the Familiar Historical Legend Of the Poisoned Tea


Marijuana: is it time to stop using a word with racist roots?

As marijuana arrests disproportionately affect minorities, controversy grows over a term prohibitionists hoped would appeal to xenophobia

Search US edition The Guardian

See Library of Congress: https://guides.loc.gov/chronicling-america-marihuana

What is cannabis?

- National Academy of Sciences Report (p.38):
  - "Cannabis is a broad term that can be used to describe organic products (e.g., cannabinoids, marijuana, hemp) derived from the Cannabis sativa plant. These products exist in various forms and are used for a number of different purposes (e.g., medical, industrial, recreational). Given its broad potential, the all-encompassing word "cannabis" has been adopted as the standard terminology within scientific and scholarly communities."
  - Herein, we will focus on psychoactive formulations of cannabis with an emphasis on the cannabinoid **delta-9-tetrahydrocannabidiol (THC).**
  - THC is generally responsible for cannabis intoxication (i.e., the "high").

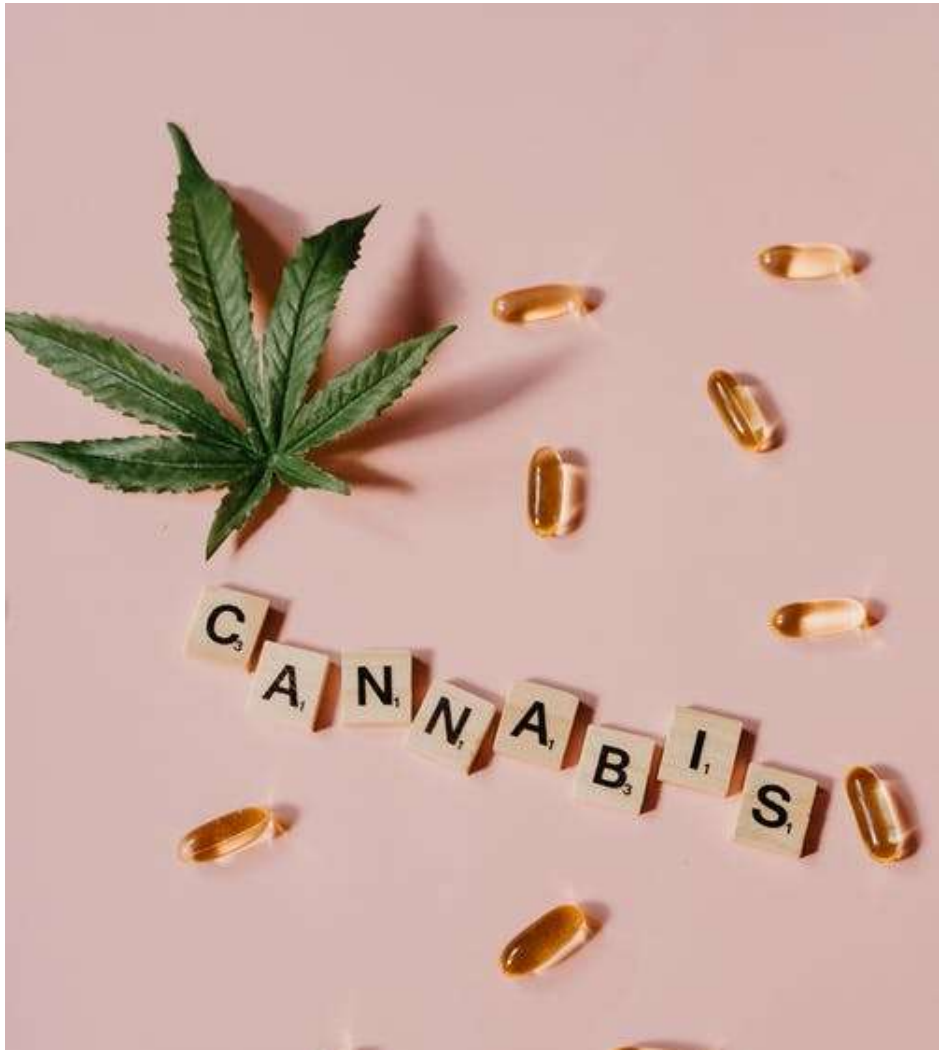
Not CBD

- We won't be discussing CBD products (no/trace amounts of THC)
- There is interest in CBD for therapeutic effects
- CBD does not produce euphoric/high
- CBD has a low potential for abuse/dependence

- Key concern may be in normalizing use of cannabis products

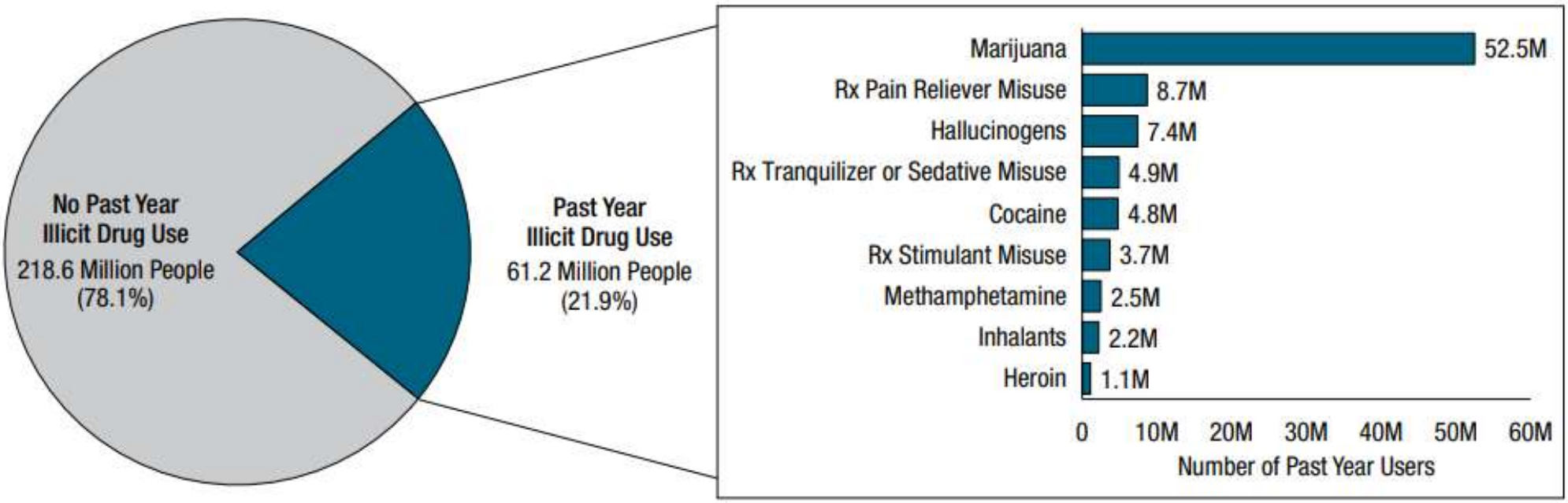
Big picture cannabis stats

- 3rd most common controlled substance used
- Used by >4% of the global population in past year (per UNODC report in 2022)
  - Increased 23% since 2010 (population only increased 13%)
- 23.8 million persons have cannabis use disorder (303 cases per 100k) per Global Burden of Disease Study



How many people use cannabis? (US)

Figure 14. Past Year Illicit Drug Use: Among People Aged 12 or Older; 2021



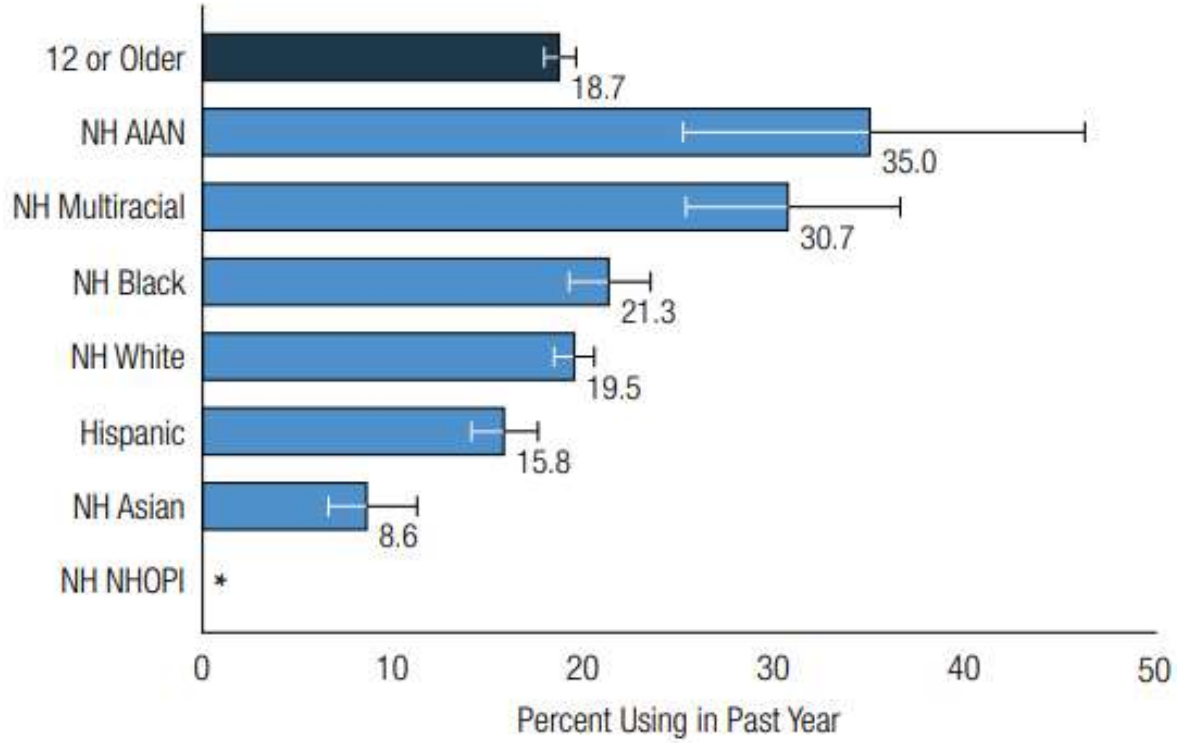
Rx = prescription.

Note: The estimated numbers of past year users of different illicit drugs are not mutually exclusive because people could have used more than one type of illicit drug in the past year

Substance Abuse and Mental Health Services Administration. (2022). Key substance use and mental health indicators in the United States: Results from the 2021 National Survey on Drug Use and Health Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/

Consumption by racial and ethnic groups

Figure 17. Past Year Marijuana Use: Among People Aged 12 or Older; by Race/Ethnicity, 2021



* Low precision; no estimate reported.

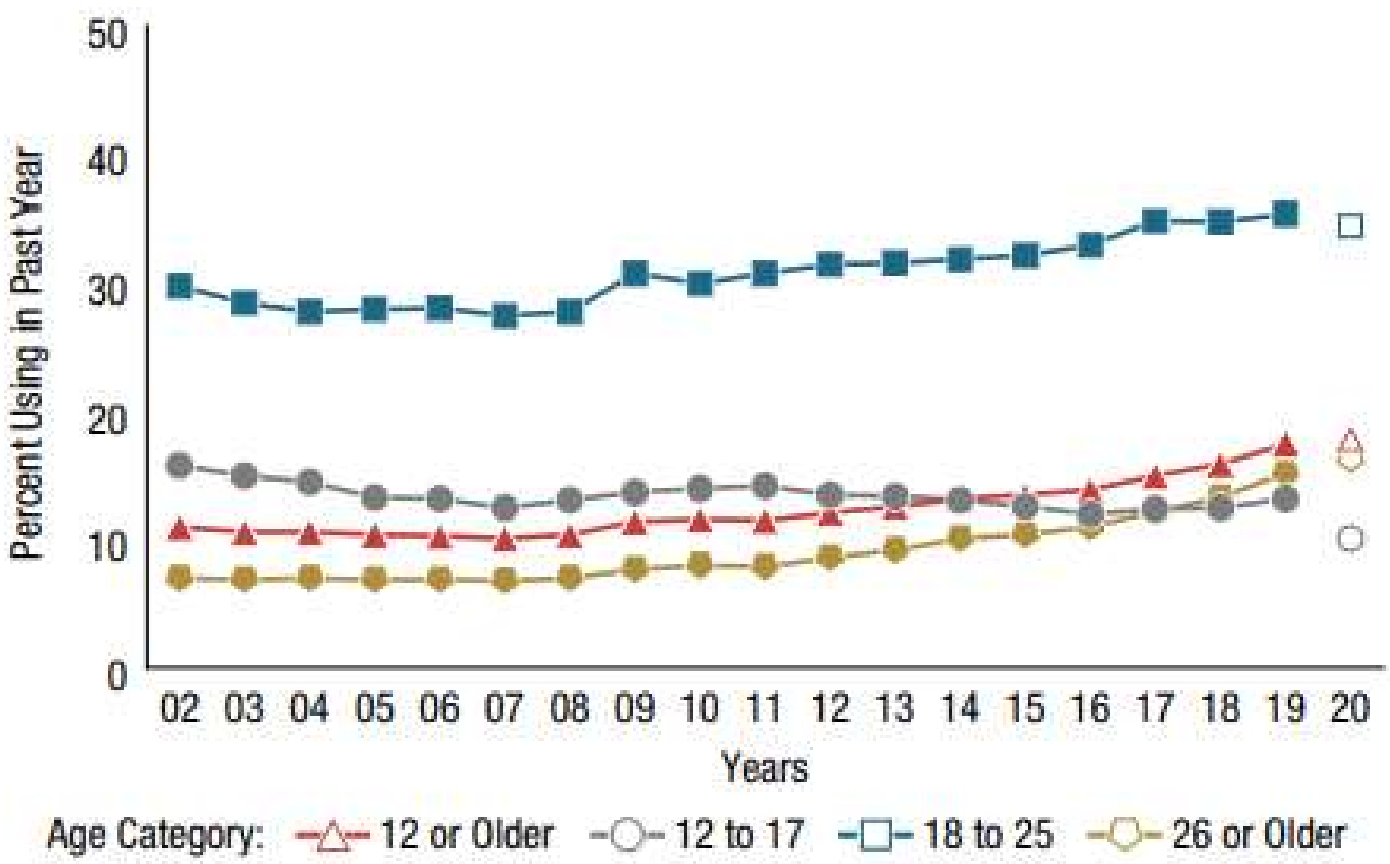
AIAN = American Indian or Alaska Native; Black = Black or African American; Hispanic = Hispanic or Latino; NH = Not Hispanic or Latino; NHOPI = Native Hawaiian or Other Pacific Islander.

Note: Error bars were calculated as 99 percent confidence intervals. Wider error bars indicate less precise estimates. Large apparent differences between groups may not be statistically significant.

Substance Abuse and Mental Health Services Administration. (2022). Key substance use and mental health indicators in the United States: Results from the 2021 National Survey on Drug Use and Health Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/

Trends in past-year cannabis use (US)

Past-Year Cannabis Use among People Aged 12 or Older: 2002-2021



Note: There is no connecting line between 2019 and 2020 to indicate caution should be used when comparing estimates between 2020 and prior years because of methodological changes for 2020. Due to these changes, significance testing between 2020 and prior years was not performed.

2021 rates:

18-25 = 35.4%

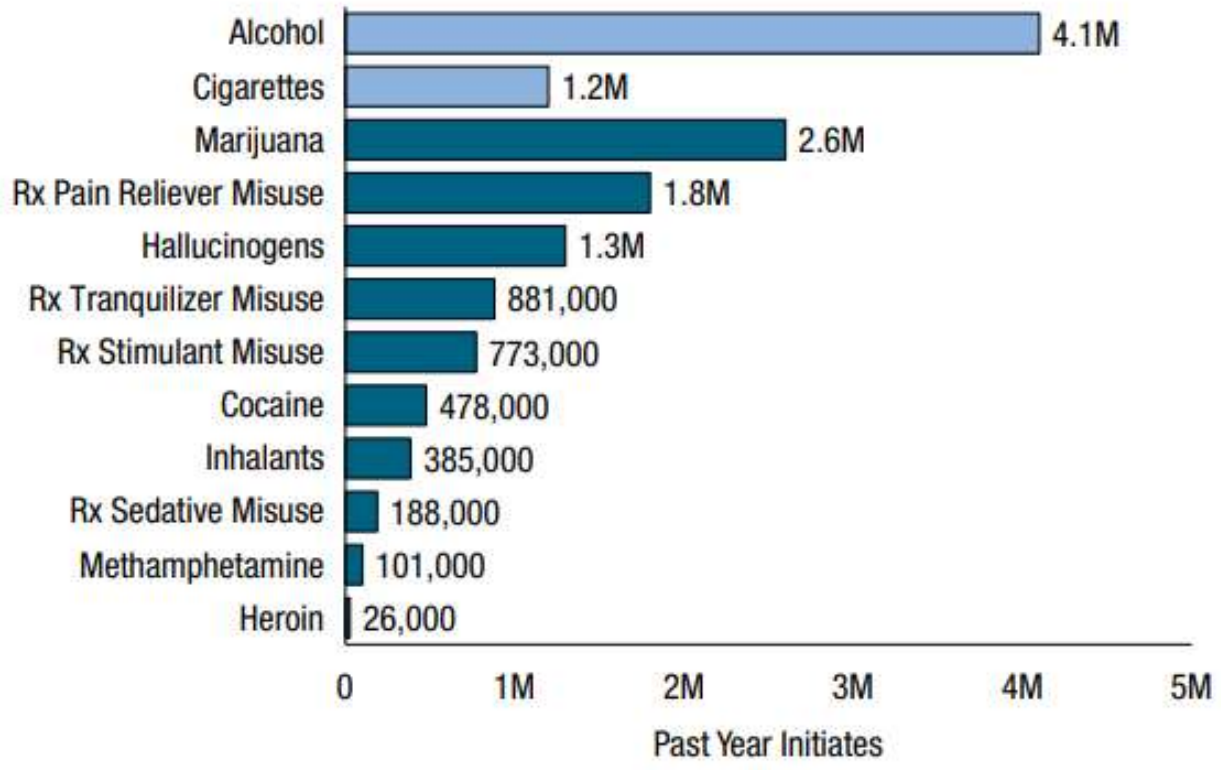
12+ = 18.7%
26+= 17.2%

12-17 = 10.5%

Source: Substance Abuse and Mental Health Services Administration.

Cannabis initiation in 2021 (US)

Past-Year Initiates of Substance Use among People Aged 12 or Older: 2021



Rx = prescription.

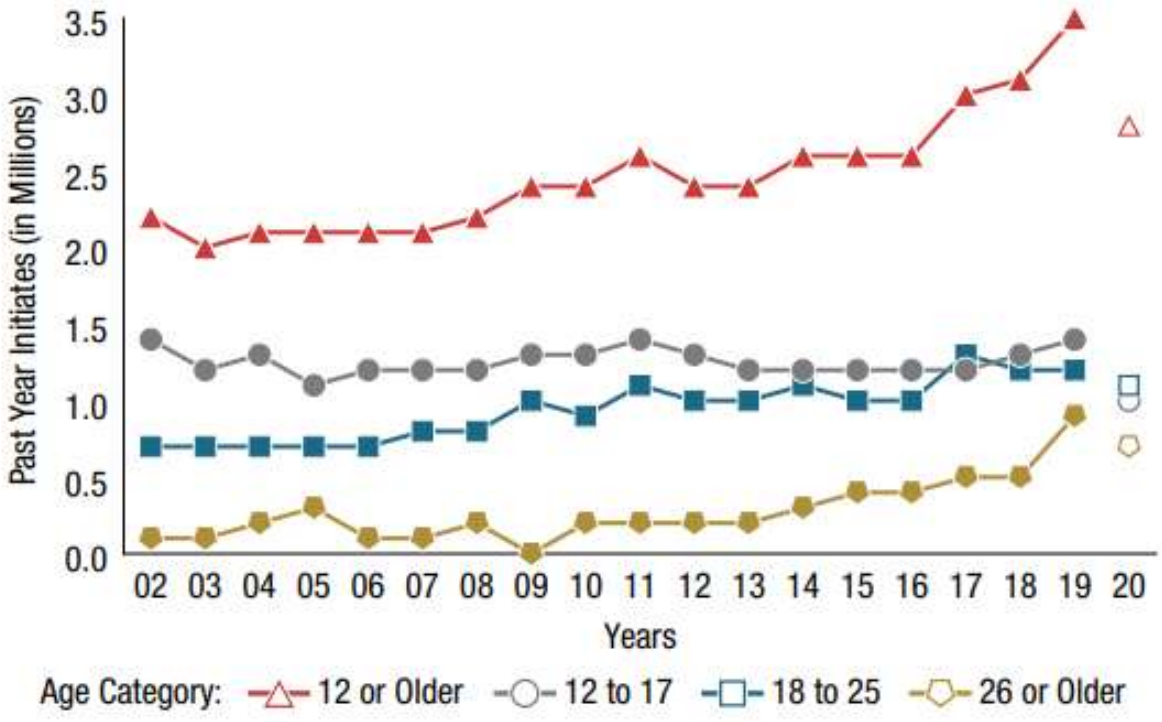
Note: Estimates for prescription pain relievers, prescription tranquilizers, prescription stimulants, and prescription sedatives are for the initiation of misuse.

Source: Substance Abuse and Mental Health Services Administration.

Initiation of cannabis over time (US)

- Past year initiates of cannabis use increased from 2.2 million in 2002 to 3.5 million in 2019
- This 2019 number was higher than the number in each year from 2002 through 2018
- ~2.6 million in 2021; >7000 per day

Past-Year Initiates of Cannabis among People Aged 12 or Older: 2002-2020



Note: There is no connecting line between 2019 and 2020 to indicate caution should be used when comparing estimates between 2020 and prior years because of methodological changes for 2020. Due to these changes, significance testing between 2020 and prior years was not performed.

Source: Substance Abuse and Mental Health Services Administration.

The clock is ticking…

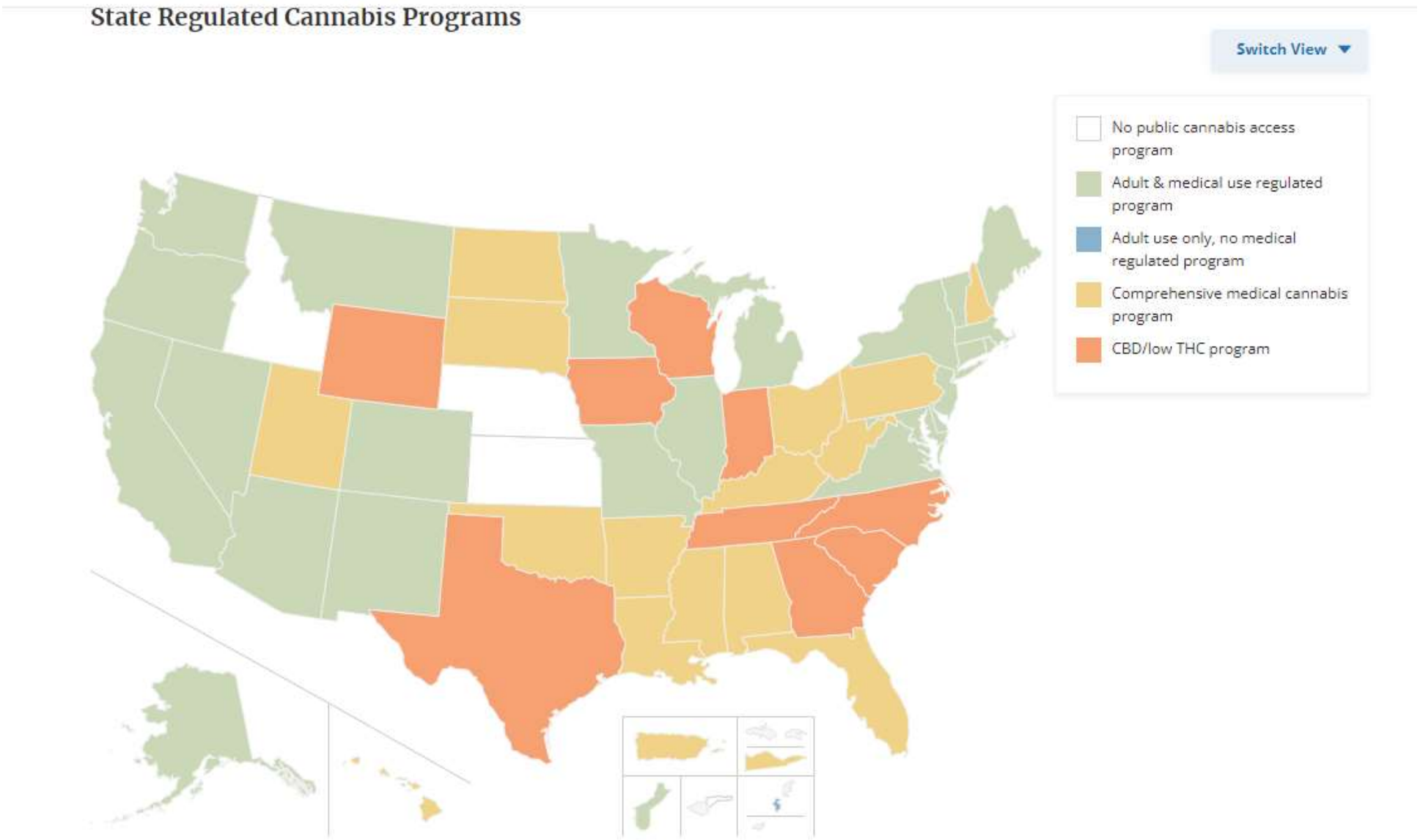
- Every 12 seconds someone initiates cannabis use
- Every 26 seconds someone initiates tobacco use
- Every 7.6 seconds someone initiates alcohol use
- Every 20 minutes someone initiates heroin use

Age of onset

- Median age of onset is 18-19 years (mean = 15-16)
- Initiation **before age 16** increases risk for cannabis use disorder (CUD) and how quickly one progresses from use to disorder
- Use **before age 18** confers increased risk for motor vehicle crash, antisocial behavior, polysubstance use, and school dropout

Struble CA, Ellis JD, Lundahl LH. Beyond the Bud: Emerging Methods of Cannabis Consumption for Youth. Pediatr Clin North Am. 2019 Dec;66(6):1087-1097.

Regulatory landscape



Source: https://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx

Cannabis In Michigan

- 10th state and 1st in the Midwest to pass a recreational cannabis law.
- On November 6, 2018, Michigan voters approved Proposal 1, which created the **Michigan Regulation and Taxation of Marihuana Act** (MRTMA), effective December 6, 2018.
- Cannabis remains a Schedule 1 federally prohibited substance.

Actual footage from my television on election night.

Cannabis is widely accessible

https://michigancannabistrail.com/map/

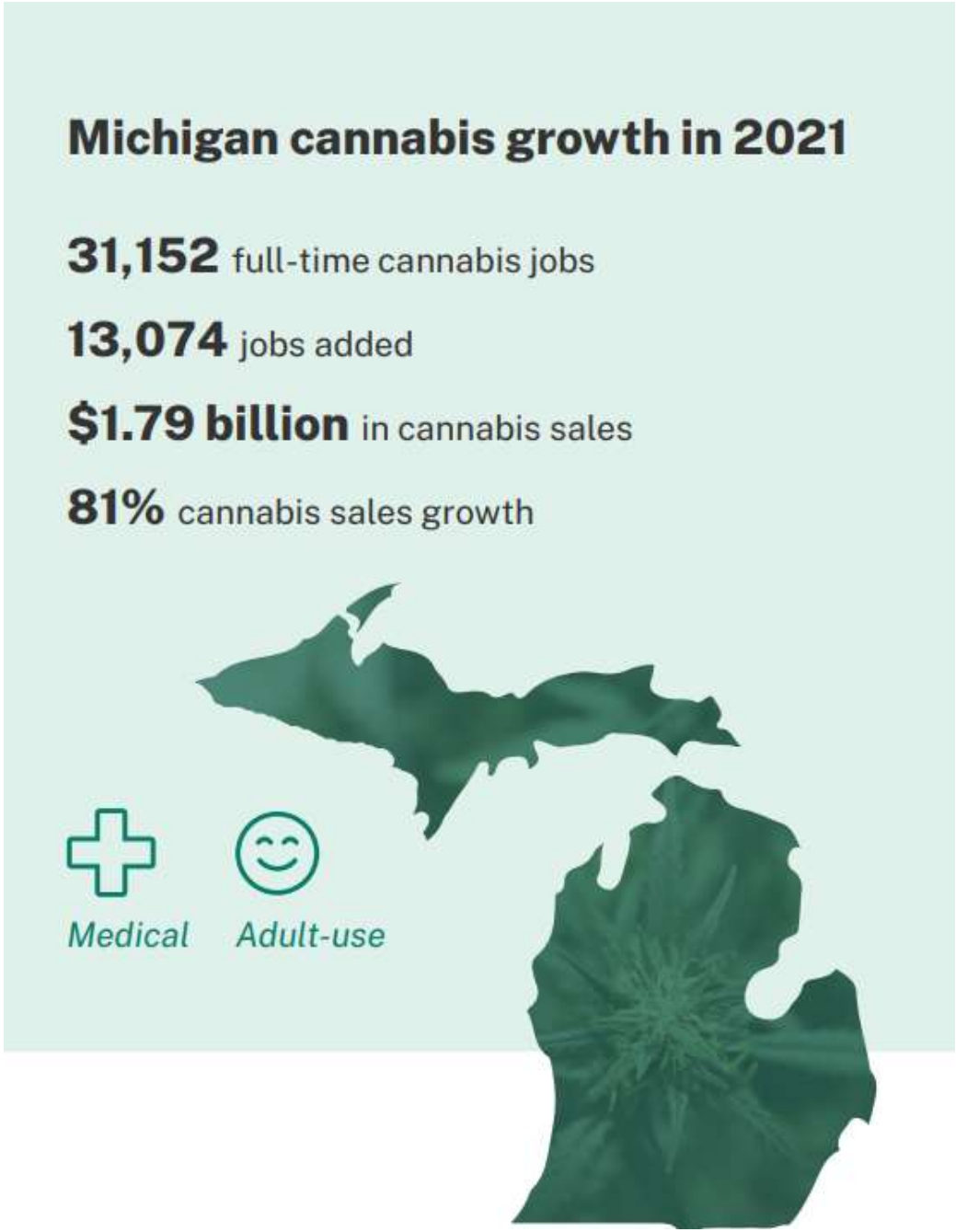
Signs of cannabis

Signs of cannabis

Signs of cannabis

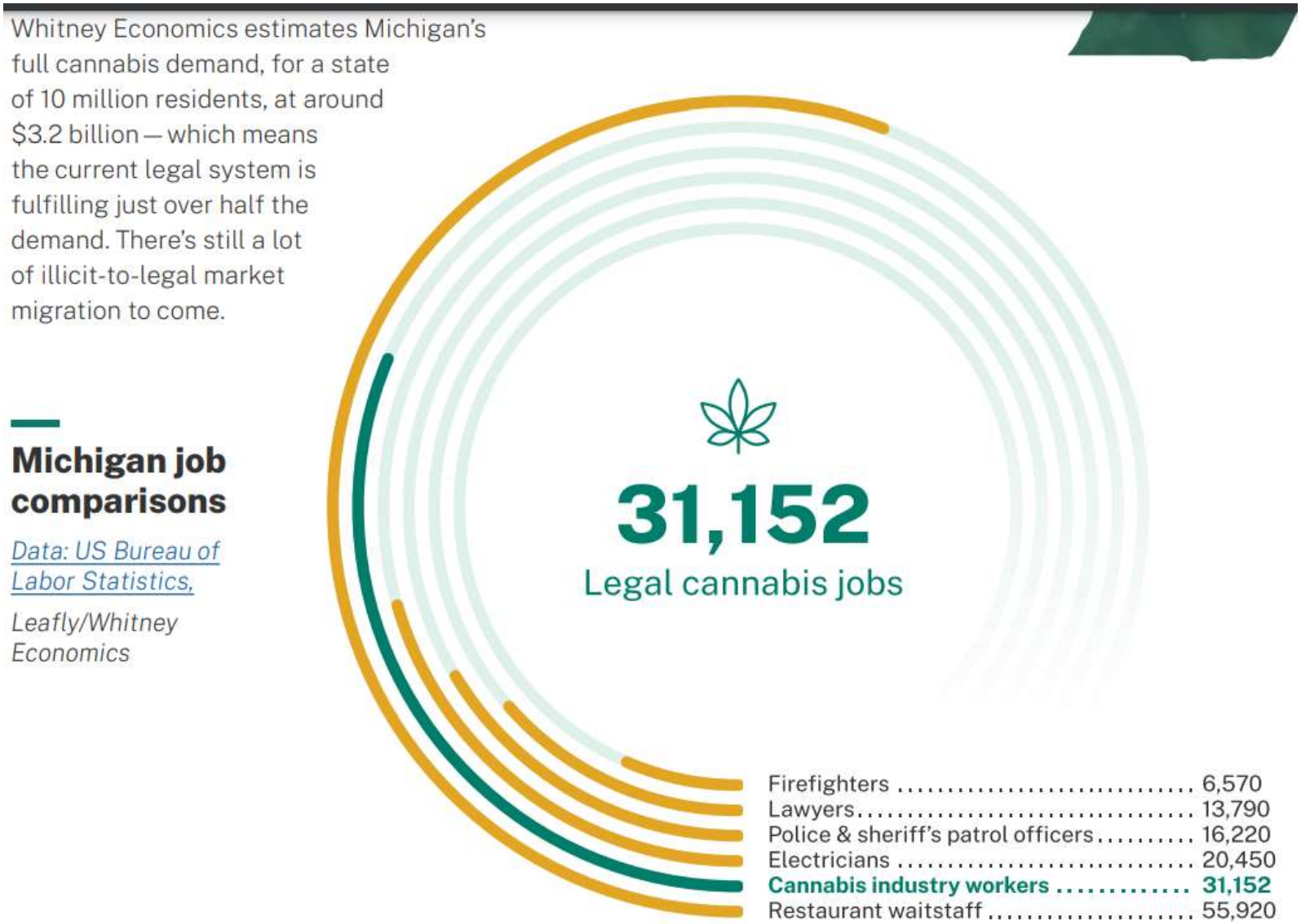
Signs of cannabis

Cannabis industry in Michigan



Source: Leafly

Cannabis industry in Michigan



Source: Leafly

Cannabis industry growth

February 18, 2022 06:00 AM

Michigan's first cannabis 'consumption lounges' will likely open soon

ANNALISE FRANK

TWEET SHARE SHARE EMAIL REPRINTS PRINT

Hot Box Social

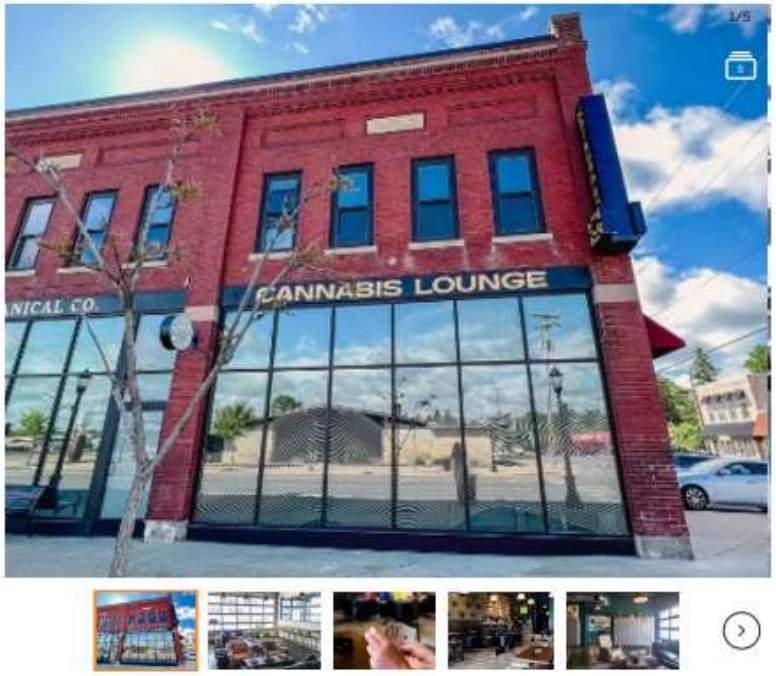
Event space Hot Box Social, from Troy-based cannabis company Trucenta, is applying to become a state of Michigan-licensed cannabis consumption lounge.

CRAIN'S DETROIT BUSINESS

PUBLIC INTEREST

Michigan's 2 marijuana lounges let you smoke inside. But will they take off?

Published: Mar. 19, 2023, 9:00 a.m.



Two marijuana lounges have opened in Michigan

mLIVE Michigan

Past-year prevalence: Michigan vs. the U.S.

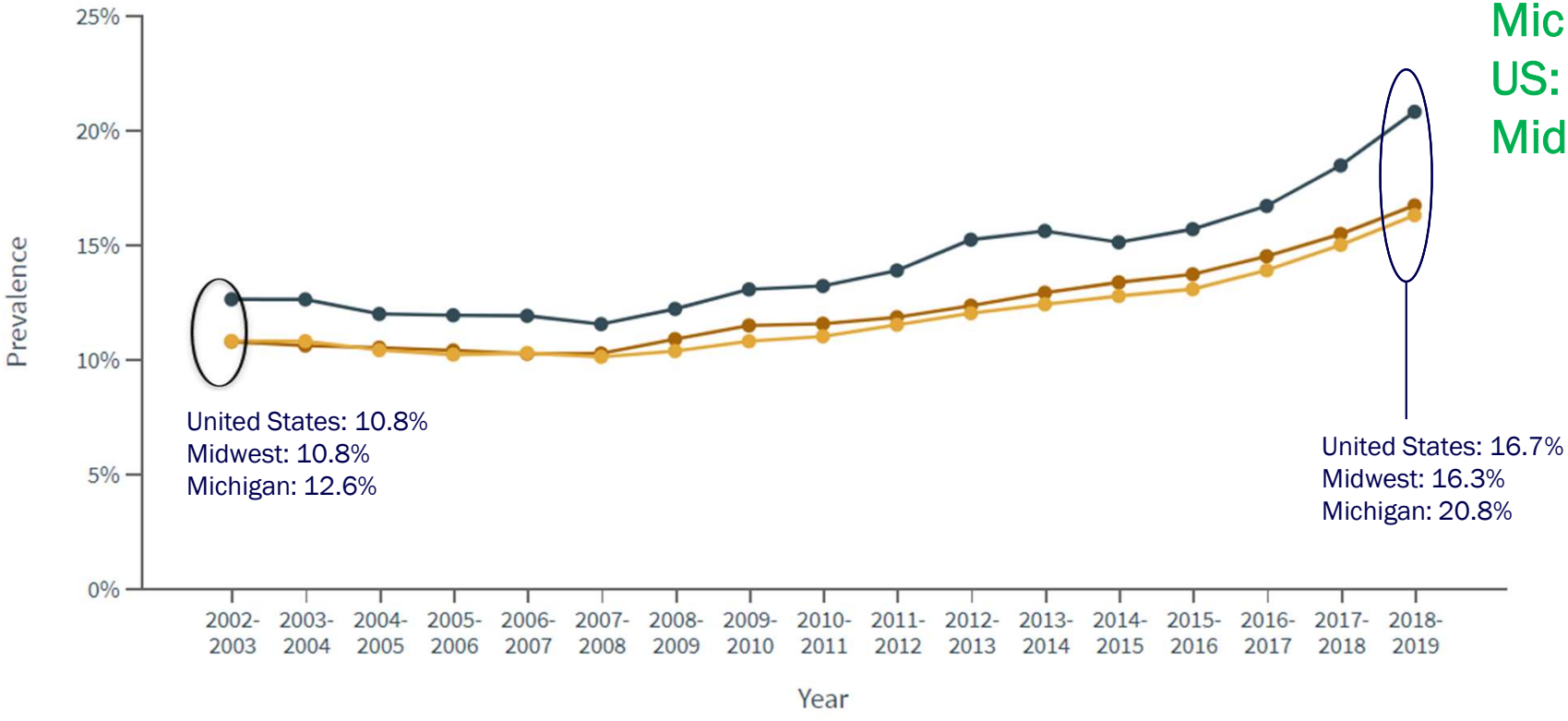
AGE	MI	US	Midwest
12+	24.7%	18.7%	19.8%
12-17	13.7%	10.5%	11.2%
18-25	43.1%	35.4%	37.0%
26+	23.1%	17.2%	18.1%

Source: NSDUH 2021 Preliminary Data

Michigan vs. the U.S.

Cannabis Use in the Past-Year among Individuals Aged 12 or Older, by Geographic Area: 2018-2019 (NSDUH)

2021:
Michigan: 24.7%
US: 18.7%
Midwest: 19.8%



Source: NSDUH

Past-month prevalence: Michigan vs. the U.S.

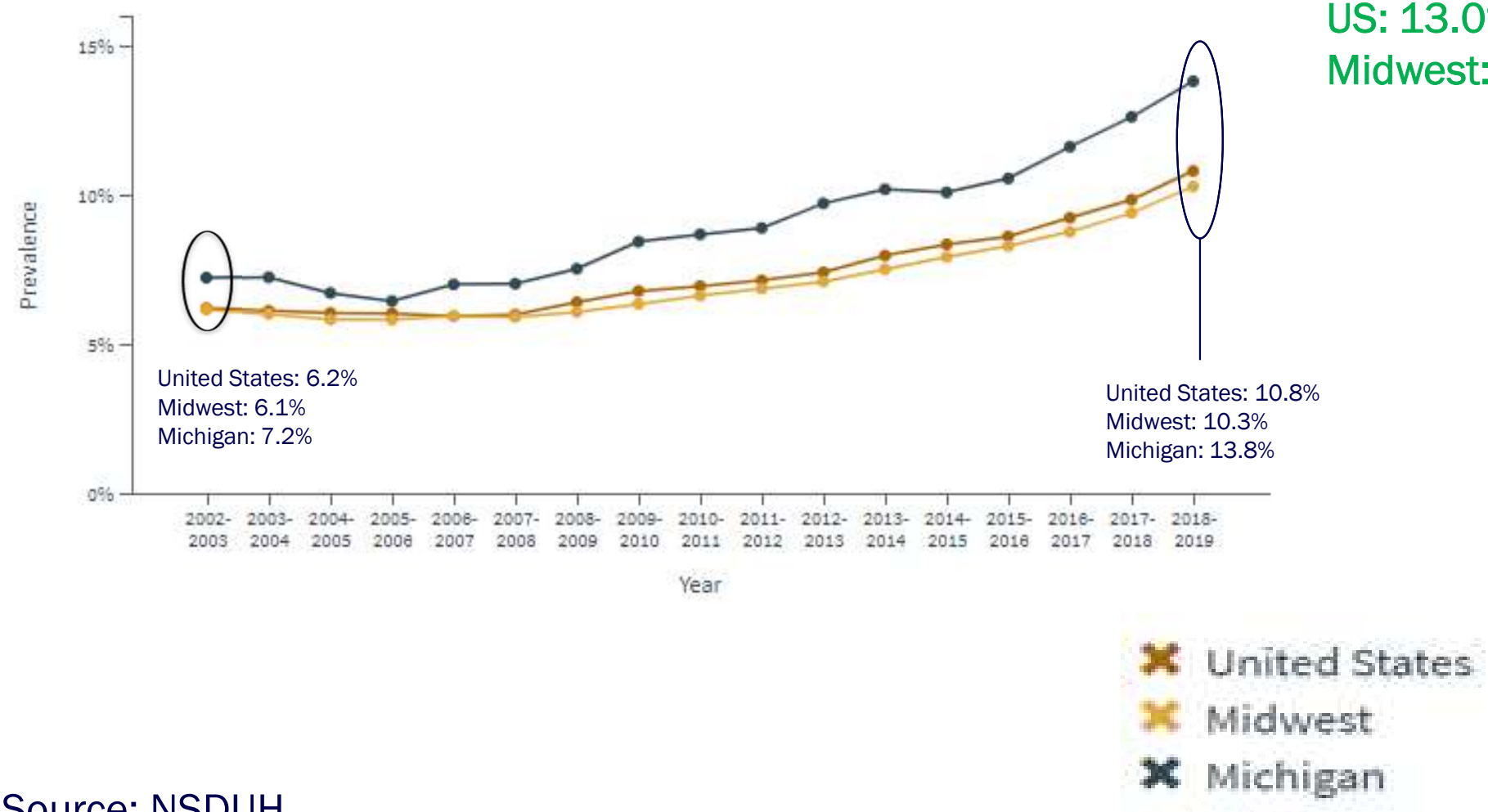
AGE	MI	US	Midwest
12+	18.3%	13.0%	13.8%
12-17	8.6%	5.8%	6.9%
18-25	31.3%	24.1%	25.8%
26+	17.4%	12.2%	12.8%

NSDUH 2021 Preliminary Data

Michigan vs. the U.S.

Cannabis Use in the Past-Month among Individuals Aged 12 or Older, by Geographic Area: 2018-2019

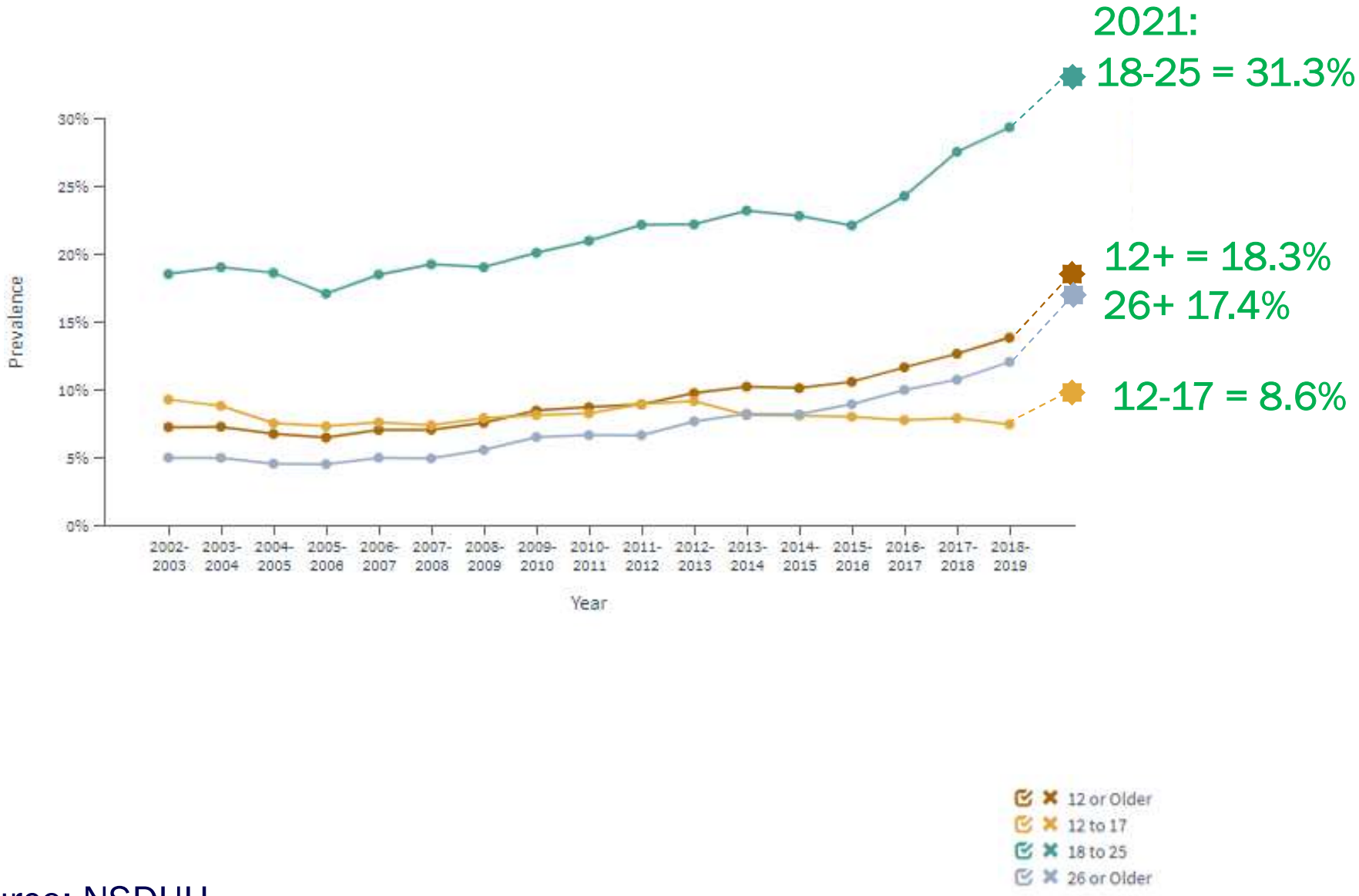
2021:
Michigan: 18.3%
US: 13.0%
Midwest: 13.8%



Source: NSDUH

Past-Month Use in Michigan

Cannabis Use in the Past-Month among Individuals in Michigan, by Age



Source: NSDUH

What does cannabis do?

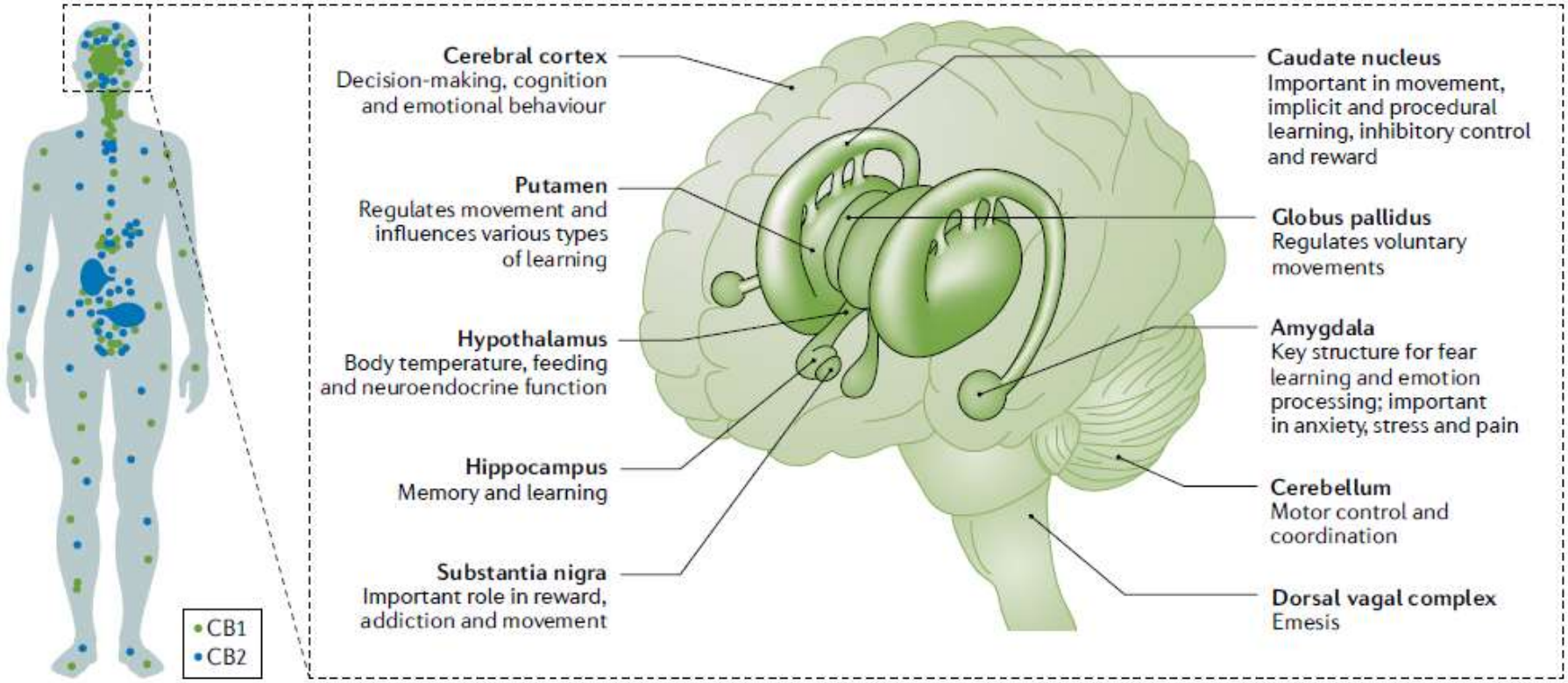


Fig. 1 | **Distribution of cannabinoid CB1 and CB2 receptors. a** | The concentration of CB1 receptors is higher in the brain than the rest of the body, whereas CB2 receptors are primarily found in immune cells and are less prevalent in the brain. **b** | Some brain regions have high CB1 receptor concentrations; these regions have diverse functions. Part **a** is adapted from REF.[290], CC BY 4.0 (https://creativecommons.org/licenses/by/4.0/). Part **b**, image courtesy of the Canadian Consortium for the Investigation of Cannabinoids[291].

Connor JP, Stjepanović D, Le Foll B, Hoch E, Budney AJ, Hall WD. Cannabis use and cannabis use disorder. Nature Reviews Disease Primers. 2021 Feb 25;7(1):1-24.

Forms of cannabis

Flower

Pre-Rolls

Vaporizers

Tinctures

Topicals

Concentrates

Edibles

Forms of cannabis

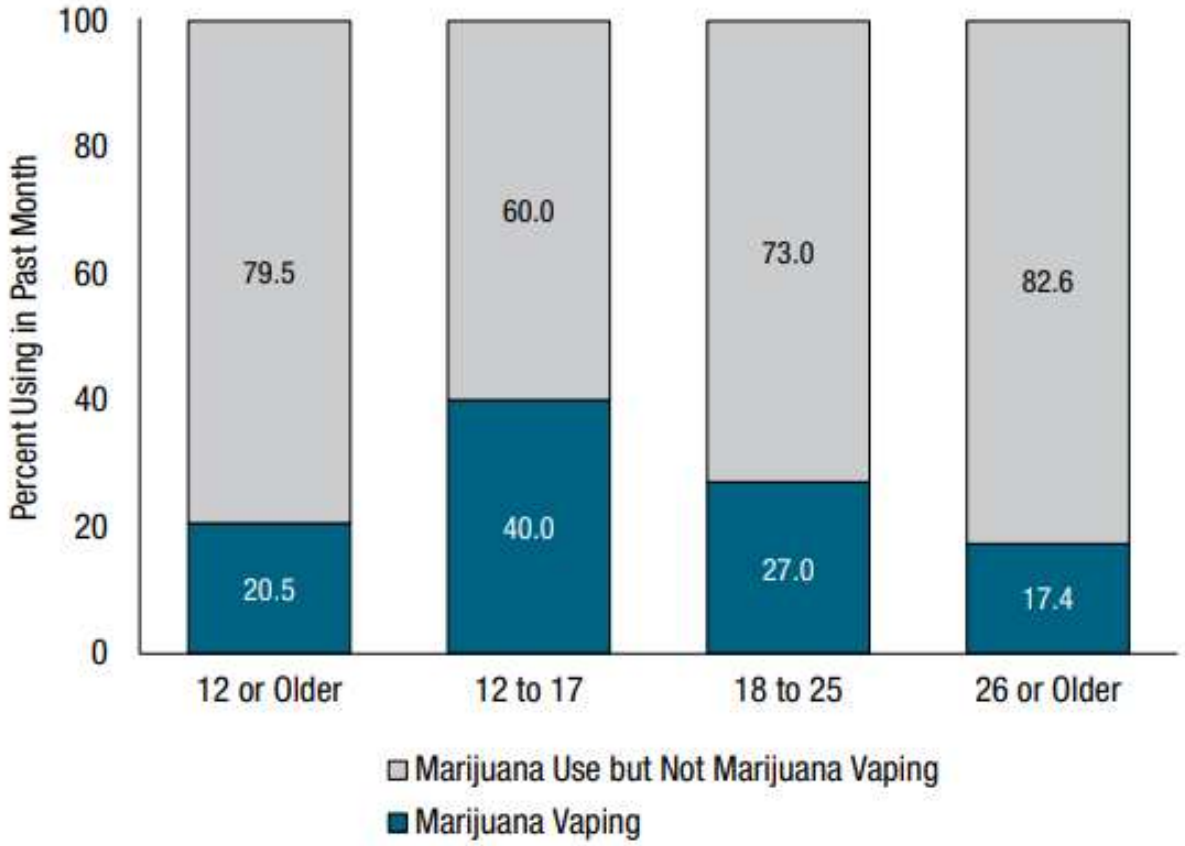
Dabbing

Vaping

- Different than smoking flower:
  - Does not involve combustion; lacks the toxic biproducts of combustion
  - Greater subjective effects; longer cognitive/psychomotor impairment
- Similar to smoking flower:
  - Rapidly absorbed into lungs
  - Peak plasma concentrations in 3-10 minutes

Vaping by age group

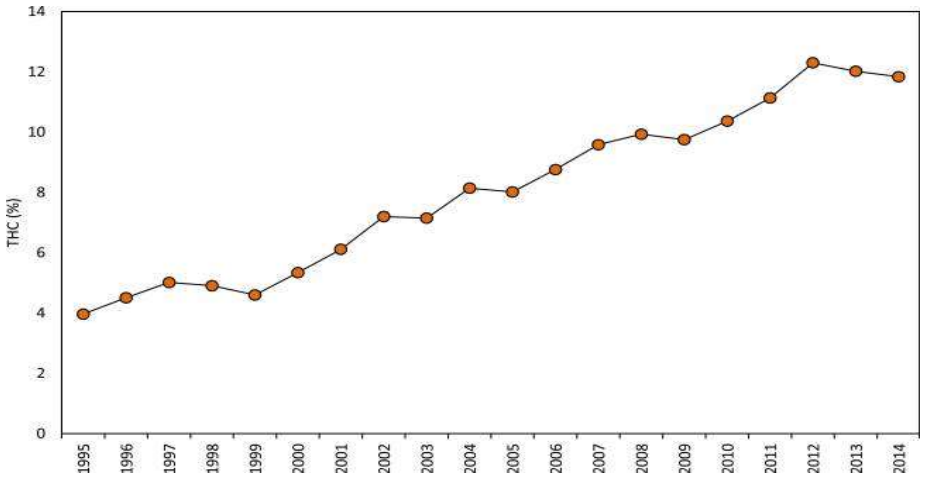
Figure 12. Type of Marijuana Use: Among Past Month Marijuana Users Aged 12 or Older; 2021

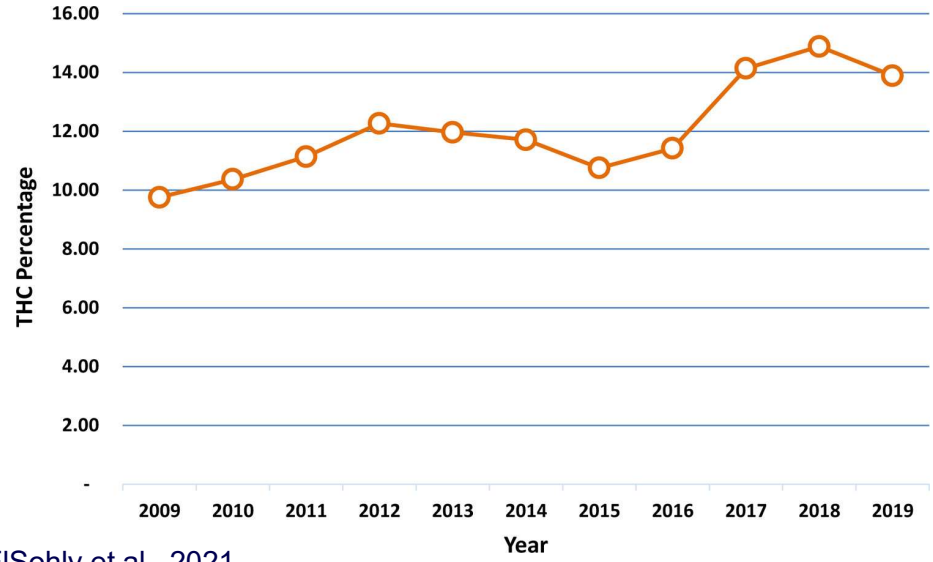


Source: NSDUH

Increases in cannabis potency

Average THC content of DEA-seized cannabis samples by year





Sources: ElSohly et al., 2016; ElSohly et al., 2021

THC products on the market reach higher potencies

~70% for extracts

~25-50% for flower

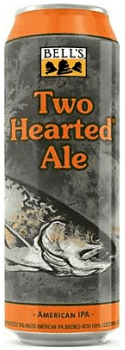
Increased potency is associated with quicker onset to first CUD symptom

(Arterberry et al., 2019, Cash et al., 2020, Mahamad et al., 2020, Smart et al.., 2017)

Analogy of cannabis potency

- Flower from the 1990s:

- Flower from today:



- Vapes & Edibles (ranges up to):

- Dabs/concentrates:

Cannabis risk perceptions (US)

Increasingly, Cannabis Use Is Perceived As Low Risk/Less Risky

"How much do people risk harming themselves physically and in other ways when they smoke marijuana once or twice a week?"

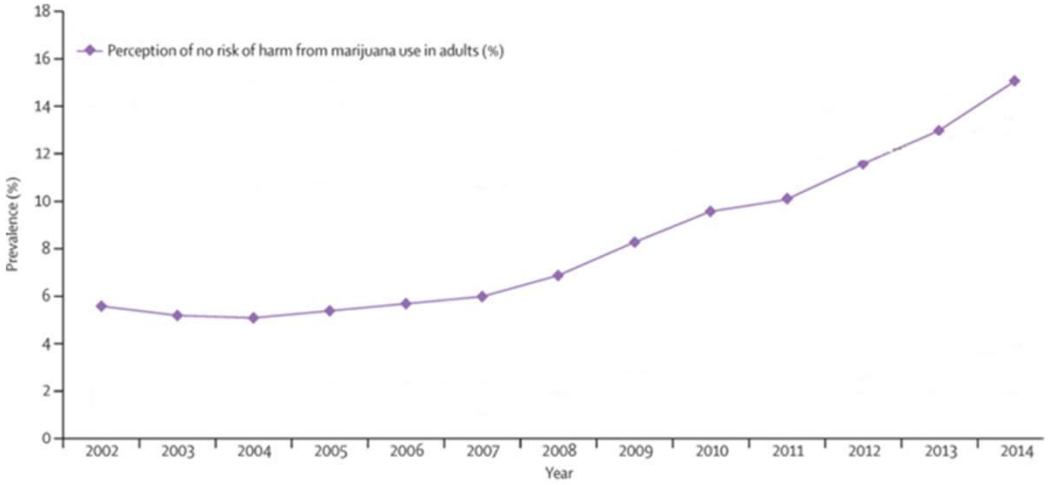
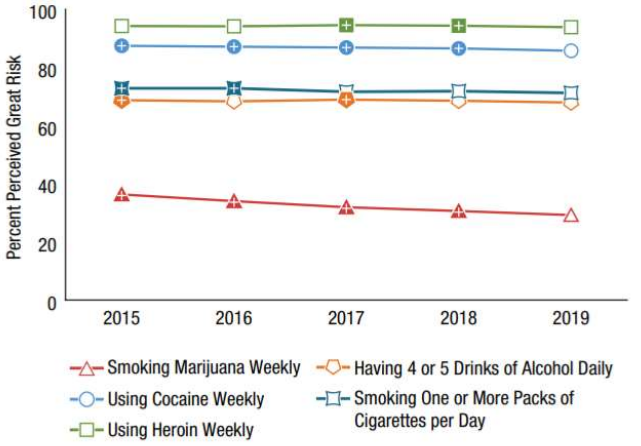


Figure 33. Perceived Great Risk from Substance Use among People Aged 12 or Older: 2015-2019



+ Difference between this estimate and the 2019 estimate is statistically significant at the .05 level.

Figure 33 Table. Perceived Great Risk from Substance Use among People Aged 12 or Older: 2015-2019

Substance Use	2015	2016	2017	2018	2019
Smoking Marijuana Once or Twice a Week	36.3+	34.0+	31.9+	30.6+	29.2
Using Cocaine Once or Twice a Week	87.4+	87.1+	86.8+	86.5+	85.7
Using Heroin Once or Twice a Week	94.2	94.1	94.5+	94.3+	93.8
Having 4 or 5 Drinks of Alcohol Nearly Every Day	68.7+	68.3	68.9+	68.5	67.9
Smoking One or More Packs of Cigarettes per Day	72.8+	72.8+	71.6	71.8	71.2

+ Difference between this estimate and the 2019 estimate is statistically significant at the .05 level.

Sources: Compton et al., 2016; NSDUH

Why should we care?

- Most people who use cannabis will not have major problems related to their use.
- Yet, there are potential consequences and downsides

Table 1. Adverse Effects of Short-Term Use and Long-Term or Heavy Use of Marijuana.

Effects of short-term use
Impaired short-term memory, making it difficult to learn and to retain information
Impaired motor coordination, interfering with driving skills and increasing the risk of injuries
Altered judgment, increasing the risk of sexual behaviors that facilitate the transmission of sexually transmitted diseases
In high doses, paranoia and psychosis
Effects of long-term or heavy use
Addiction (in about 9% of users overall, 17% of those who begin use in adolescence, and 25 to 50% of those who are daily users)*
Altered brain development*
Poor educational outcome, with increased likelihood of dropping out of school*
Cognitive impairment, with lower IQ among those who were frequent users during adolescence*
Diminished life satisfaction and achievement (determined on the basis of subjective and objective measures as compared with such ratings in the general population)*
Symptoms of chronic bronchitis
Increased risk of chronic psychosis disorders (including schizophrenia) in persons with a predisposition to such disorders

* The effect is strongly associated with initial marijuana use early in adolescence.

Table 2. Level of Confidence in the Evidence for Adverse Effects of Marijuana on Health and Well-Being.

Effect	Overall Level of Confidence*
Addiction to marijuana and other substances	High
Abnormal brain development	Medium
Progression to use of other drugs	Medium
Schizophrenia	Medium
Depression or anxiety	Medium
Diminished lifetime achievement	High
Motor vehicle accidents	High
Symptoms of chronic bronchitis	High
Lung cancer	Low

* The indicated overall level of confidence in the association between marijuana use and the listed effects represents an attempt to rank the strength of the current evidence, especially with regard to heavy or long-term use and use that starts in adolescence.

Volkow, N.D., Baler, R.D., Compton, W.M., Weiss, S.R.B., 2014. Adverse Health Effects of Marijuana Use. N Engl J Med 370, 2219–2227.

What is cannabis use disorder?

- Cannabis use disorder is a serious psychiatric condition that involves the continued use of cannabis despite impairment in psychological, physical, or social functioning.
- Recent meta-analysis (Leung et al., 2020): 22% of people who use cannabis have CUD
- For young adults, risk of CUD is 33% if regular (weekly/daily) use

Broad domain	DSM-5 CUD 'diagnostic criteria'[4]
Impaired control	**1**[a] Cannabis is taken in larger amounts or over longer periods than intended
	2[a] There is a persistent desire or unsuccessful attempts to cut down or control cannabis use
	3[a] A great deal of time spent in activities necessary to obtain cannabis, use cannabis or recover from its effects
	4 Craving, or a strong desire or urge to use cannabis
Increasing priority resulting in social and physical risk	**5** Recurrent cannabis use resulting in a failure to fulfil major role obligations at work, school or home
	6 Continued cannabis use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of cannabis
	7[a] Important social, occupational, or recreational activities are given up or reduced because of cannabis use
	8 Recurrent cannabis use in situations in which it is physically hazardous
	9[a] Cannabis use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by cannabis
Physiological dependence	**10**[a] Tolerance, as evidenced by a markedly diminished effect
	11[a] Withdrawal syndrome, or drinking to prevent withdrawal

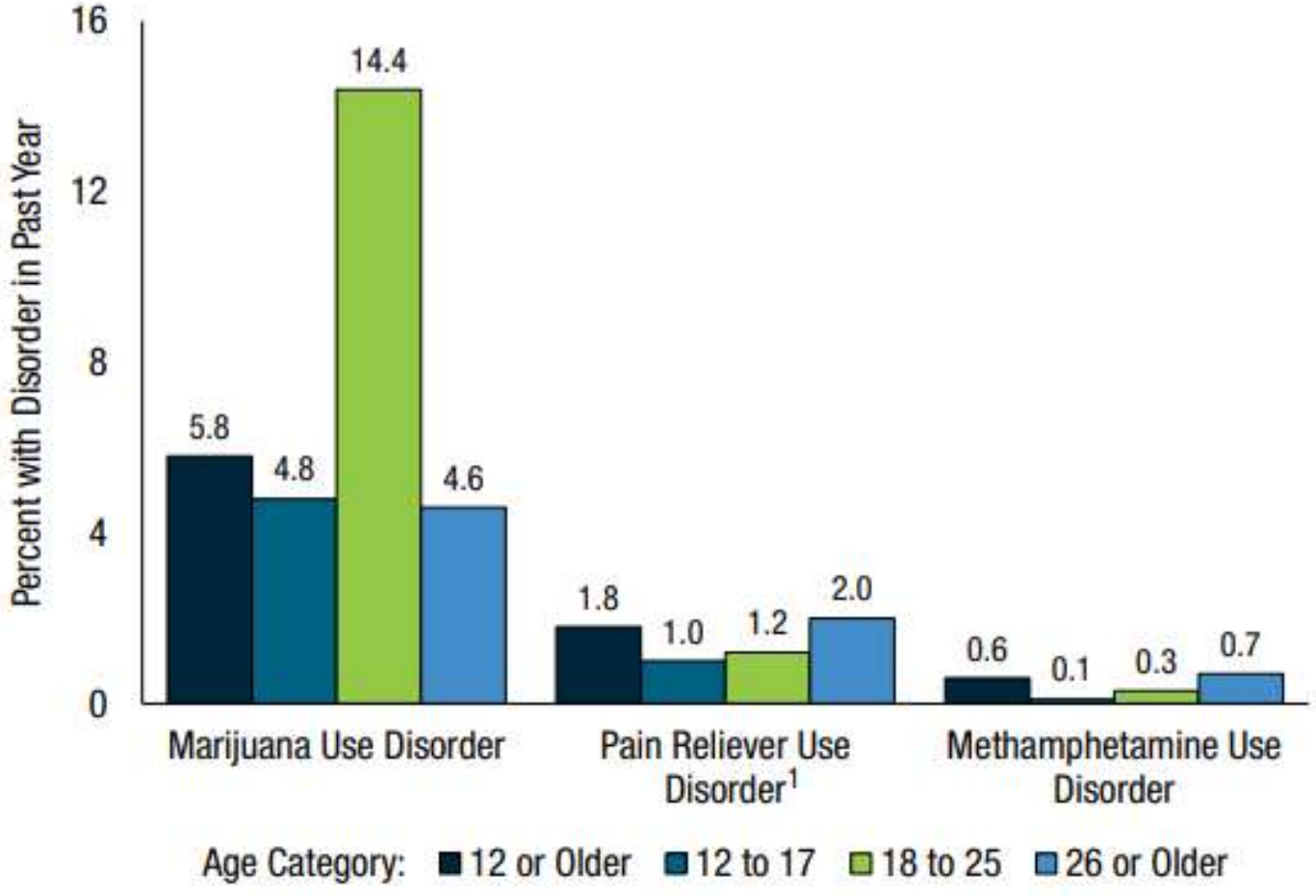
Hasin, D. S. (2018). US epidemiology of cannabis use and associated problems. Neuropsychopharmacology, 43(1), 195-212.

Leung, J., Chan, G. C., Hides, L., & Hall, W. D. (2020). What is the prevalence and risk of cannabis use disorders among people who use cannabis? A systematic review and meta-analysis. Addictive Behaviors, 106479

Connor JP, Stjepanović D, Le Foll B, Hoch E, Budney AJ, Hall WD. Cannabis use and cannabis use disorder. Nature Reviews Disease Primers. 2021 Feb 25;7(1):1-24.

Cannabis Use Disorder Prevalence (2021)

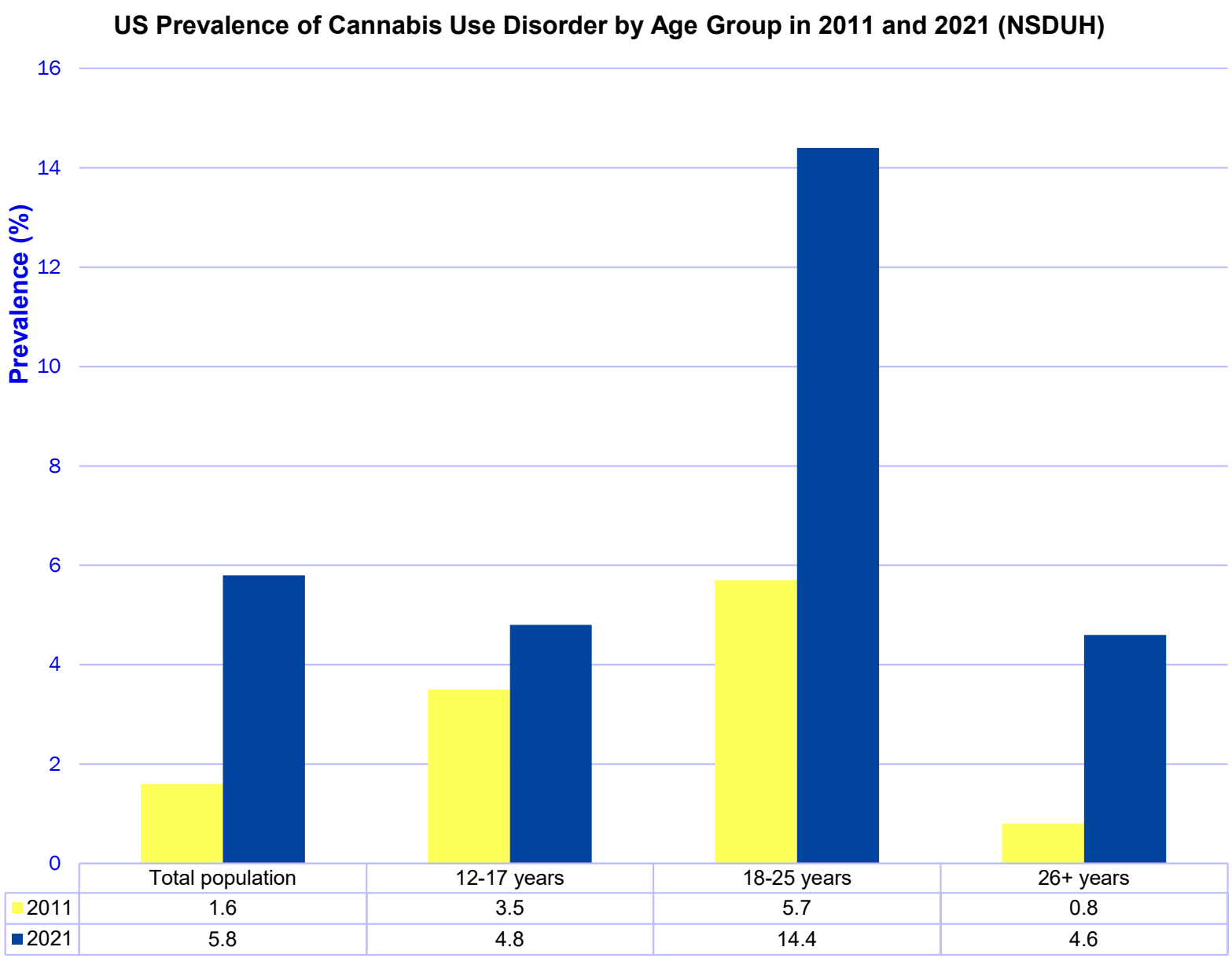
Figure 35. Marijuana Use Disorder, Pain Reliever Use Disorder, and Methamphetamine Use Disorder in the Past Year: Among People Aged 12 or Older; 2021



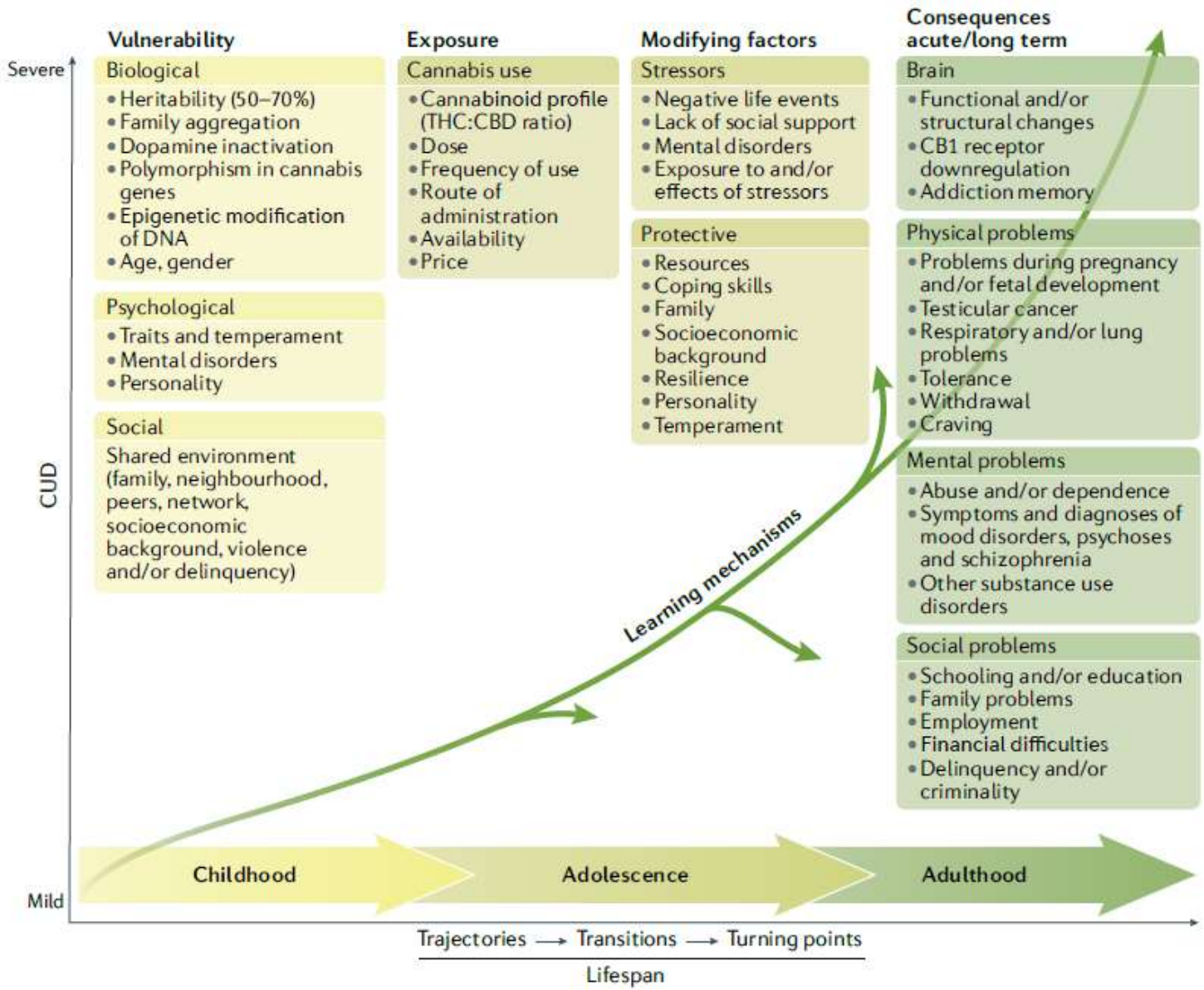
[1] Includes data from all past year users of prescription pain relievers.

Source: NSDUH

Increased prevalence of CUD



Multifactorial Model for CUD



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Potency and frequency matter for CUD risk

- In 1992: lifetime risk for CUD was 9%; now it is 30%
- Of particular concern is recent increases in vaping among youth
- Risk for CUD increases as frequency of use increases
- Co-use with tobacco increases risk for CUD, more symptoms of withdrawal, and lower rates of cessation/successfully quitting

The Common Cannabis Myth

- There is widely held belief that people cannot develop "dependence" on cannabis or experience "withdrawal"

- Withdrawal syndrome: mainly mood/behavioral symptoms
  - Cannabinoid receptors start to return to normal functioning after 2 days abstinence; takes ~4 weeks abstinence to get back to "normal"
  - Women have stronger symptoms than men including physical symptoms (e.g., such as nausea and stomach pain)
  - Some data support treating withdrawal with gabapentin

Cannabis Withdrawal (DSM-V)

A.	Cessation of cannabis use that has been heavy and prolonged (i.e., usually daily or almost daily use over a period of a least a few months)
B.	3 or more of the following signs and symptoms develop within approximately 1 week of Criterion A: – Irritability, anger or aggression – Nervousness or anxiety – Sleep difficulty (insomnia, disturbing dreams) – Decreased appetite or weight loss – Restlessness – Depressed mood – At least one of the following physical symptoms causing significant discomfort: abdominal pain, shakiness/tremors, sweating, fever, chills, or headache
C.	The signs or symptoms from criterion B cause clinically significant distress or impairment in social, occupational or other important areas of functioning.
D.	The symptoms are not due to another medical condition and are not better explained by another mental disorder.

Co-Occurring Problems

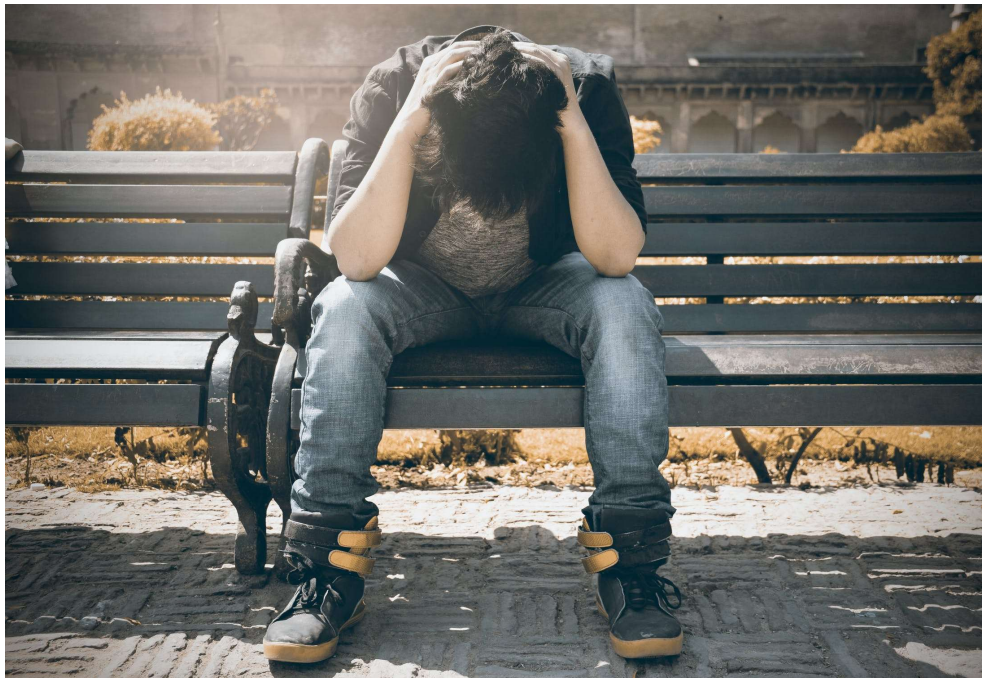
- In Australia: 7 in 10 people with CUD have a co-occurring psychiatric disorder

- In US, CUD associated with:
  - 3.8 greater odds of mood disorder
  - 2.8 greater odds of anxiety disorder (40% of people with CUD)
  - 4.3 greater odds of PTSD
  - 4.8 greater odds of personality disorder
  - 6.0 greater odds of alcohol use disorder
  - 9.0 greater odds of another drug use disorder

Connor JP, Stjepanović D, Le Foll B, Hoch E, Budney AJ, Hall WD. Cannabis use and cannabis use disorder. Nature Reviews Disease Primers. 2021 Feb 25;7(1):1-24.

Co-Occurring Problems

- People with major depression: 12% have/had CUD
- People with bipolar disorder: 20% have/had CUD
- People with schizophrenia: 26% have/had CUD
- People with PTSD: 9% have/had CUD



Connor JP, Stjepanović D, Le Foll B, Hoch E, Budney AJ, Hall WD. Cannabis use and cannabis use disorder. Nature Reviews Disease Primers. 2021 Feb 25;7(1):1-24.

Hierarchy of cannabis use and CUD

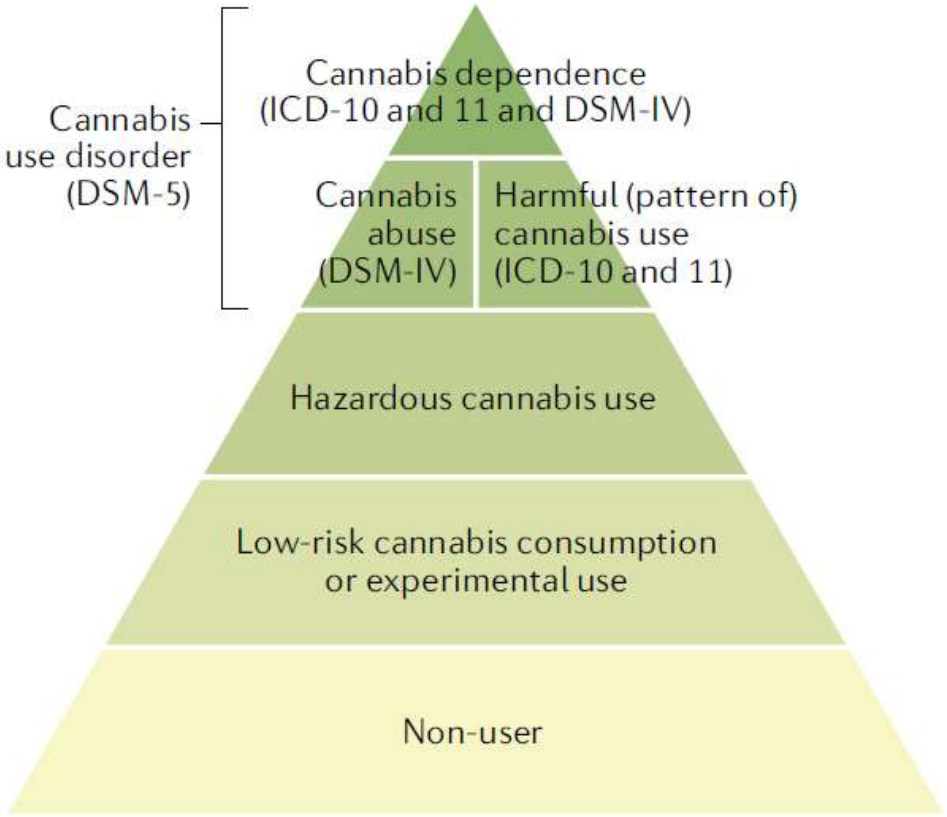


Fig. 6 | **The hierarchy of substance use disorders across diagnostic systems.** Cannabis use and misuse form a spectrum of severity. Most individuals do not use cannabis. Individuals who do use cannabis typically use infrequently.

Connor JP, Stjepanović D, Le Foll B, Hoch E, Budney AJ, Hall WD. Cannabis use and cannabis use disorder. Nature Reviews Disease Primers. 2021 Feb 25;7(1):1-24.

USPSTF & Other Recommendations

- Routine screening as part of primary care
- Good clinical practice: ask about cannabis separate from other drugs
  - At minimum ask: quantity, frequency, mode of administration
  - If possible estimate of THC content/potency (can ask estimate of how "strong" their products are; if bought at dispensary they put THC mg on package)
- Patients, providers, staff report benefits of normalizing discussion of drug use during primary care

- Bradley, K. A., Lapham, G. T., & Lee, A. K. (2020). Screening for Drug Use in Primary Care: Practical Implications of the New USPSTF Recommendation. JAMA internal medicine, 180(8), 1050–1051
- US Preventive Services Task Force...Wong JB. Screening for Unhealthy Drug Use: US Preventive Services Task Force Recommendation Statement. JAMA. 2020 Jun 9;323(22):2301-2309.
- Connor JP, Stjepanović D, Le Foll B, Hoch E, Budney AJ, Hall WD. Cannabis use and cannabis use disorder. Nature Reviews Disease Primers. 2021 Feb 25;7(1):1-24.

How to start the conversation…

- *In the past year, how often have you used cannabis?*
  - *Single item is as effective as multi-item scales.*
- *Tell me about how cannabis fits into your life…*
- *What does your cannabis use look like*
  - *What kinds? How strong?*
  - *How often?*
  - *How do you feel (mentally, physically) when you take a break?*

- Use a symptom checklist for diagnostic criteria among those who use cannabis to guide patient-centered conversations

CUD Assessment

Box 3 | **Cannabis use disorder assessment**

Cannabis intoxication

Clinical history taking

- Recent use of cannabis
- Cannabis-specific behavioural or psychological changes (impaired motor coordination and judgement, reports slowed time, euphoria, anxiety and social withdrawal)
- Conjunctival injection (dilation of conjunctival vessels), increased appetite, dry mouth or tachycardia within 2 hours of cannabis use

Adjunctive tools (cannabis specific)[a]

- None

Cannabis intake

Clinical history taking

- Time and date of last use
- Frequency of use
- Quantity of use[b] and if possible Δ^9-tetrahydrocannabinol (THC) to cannabidiol (CBD) ratio
- Usual pattern of use (almost daily, daily, binge or infrequent)
- Mode of administration: smoking (joint or cone), inhalation (vaping), ingestion (oil or edibles) or dabbing
- Duration of use, including sustained periods of abstinence or minimal use

Adjunctive tools (cannabis specific)[a]

- Most applicable: Timeline Follow-Back[181]
- Other: urine screen for biological verification of cannabis use

Cannabis harms and consequences

Clinical history taking

- Social (such as interpersonal relationships, financial, vocational, forensic and housing circumstances)
- Mental (such as anxiety, depression, suicidal ideation and attempts, homicidal thoughts or cannabis-induced psychotic disorders) including mental state examination (MSE)
- Physical (for example, cognition, memory, self-inflicted or accidental injury, and respiratory and cardiovascular systems)

Adjunctive tools (cannabis specific)[a]

- Most applicable: none.
- Other: Marijuana Problem Scale (MPS)[314], Risk and Consequences Questionnaire-Marijuana (RCQ-M)[315]

Cannabis use disorder/dependence

Clinical history taking

- DSM-5 Cannabis use disorder criteria
- ICD-11 Hazardous cannabis use, Harmful cannabis use or Cannabis dependence

Adjunctive tools (cannabis specific)[a]

- Most applicable: Severity of Dependence Scale (SDS)[183] — ≥3/15 threshold for likely dependence and Composite International Diagnostic Interview (CIDI)[316,317]
- Other: Cannabis Abuse Screening Test (CAST) [318]; Cannabis Use Disorder Identification Test (CUDIT) [319,320]; Cannabis Problems Questionnaire (CPQ) [321]; Marijuana Screening Inventory (MSI-X) [322]; and the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST)[323]

Cannabis withdrawal

Clinical history taking

- DSM-5 Cannabis withdrawal criteria

Adjunctive tools (cannabis specific)[a]

- Most applicable: Cannabis Withdrawal Scale (CWS)[324] and Marijuana Withdrawal Checklist (MWC; available online)[176,325]

[a]Based on review[326], predominantly used for research purposes or populations requiring comprehensive work-up, treatment planning and evaluation. [b]There is no standard approach to measurement of quantity of cannabis. THC content varies widely, as does volume based on the type of cannabis used (e.g. cannabis leaf, 'buds'/flowers, resin, oil) and method of administration. One joint (5 mg of THC[253]), five bong or pipe hits, or ten puffs have been used to assist standardization by some researchers[252,253]. In some regions mixing cannabis with tobacco is common.

CUDIT Screening

- Score ≥ 13 is highly sensitive and specific
- Identifies 90% of people with CUD

The Cannabis Use Disorder Identification Test - Revised (CUDIT-R)

Have you used any cannabis over the past six months? **YES / NO**

If YES, please answer the following questions about your cannabis use. Circle the response that is most correct for you in relation to your cannabis use *over the past six months*

1. How often do you use cannabis?

Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week
0	1	2	3	4

2. How many hours were you "stoned" on a typical day when you had been using cannabis?

Less than 1	1 or 2	3 or 4	5 or 6	7 or more
0	1	2	3	4

3. How often during the past 6 months did you find that you were not able to stop using cannabis once you had started?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

4. How often during the past 6 months did you fail to do what was normally expected from you because of using cannabis?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

5. How often in the past 6 months have you devoted a great deal of your time to getting, using, or recovering from cannabis?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

6. How often in the past 6 months have you had a problem with your memory or concentration after using cannabis?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

7. How often do you use cannabis in situations that could be physically hazardous, such as driving, operating machinery, or caring for children:

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

8. Have you ever thought about cutting down, or stopping, your use of cannabis?

Never	Yes, but not in the past 6 months	Yes, during the past 6 months
0	2	4

This scale is in the public domain and is free to use with appropriate citation:

Adamson, Kay-Lambkin, Baker, Lewin, Thornton, Kelly, and Sellman. (2010). An Improved Brief Measure of Cannabis Misuse: The Cannabis Use Disorders Identification Test – Revised (CUDIT-R). Drug and Alcohol Dependence (In Press).

Guidelines for lower risk use

- Endorsed by Canadian Health Organizations
- 10 recommendations similar to the low- risk guidelines for alcohol and other behaviors
- Additionally: Tolerance Breaks

Box 4 | **Lower-risk cannabis use guidelines**[200]

Abstinence

- The most effective way to avoid the risks of cannabis use is to abstain from use

Age of initial use

- Delaying cannabis use, at least until after adolescence, will reduce the likelihood or severity of adverse health outcomes

Choice of cannabis products

- Use products with low Δ^9-tetrahydrocannabinol (THC) content and high cannabidiol (CBD) to THC ratio
- Synthetic cannabis products, such as K2 and Spice, should be avoided

Cannabis use methods and practices

- Avoid smoking burnt cannabis and choose safer inhalation methods including vaporizers, e-cigarette devices and edibles
- If cannabis is smoked, avoid harmful practices such as inhaling deeply or breath-holding

Frequency and intensity of use

- Avoid frequent or intensive use, and limit consumption to occasional use, such as only 1 day a week or on weekends, or less

Cannabis use and driving

- Do not drive or operate other machinery for at least 6 hours after using cannabis. Combining alcohol and cannabis increases impairment and should be avoided

Special-risk populations

- People with a personal or family history of psychosis or substance use disorders, as well as pregnant women, should not use cannabis at all

Combining risks or risk behaviours

- Avoid combining any of the risk factors related to cannabis use. Multiple high-risk behaviours will amplify the likelihood or severity of adverse outcomes

Connor JP et al. Cannabis use and cannabis use disorder. Nature Reviews Disease Primers. 2021 Feb 25;7(1):1-24.

Effects on driving

- Subjectively: patients feel like they are slowed down/better drivers

- Objectively: impairs coordination and reaction time

Addressing driving risk

- This is a topic that folks have misconceptions about; avoid an argument

Elicit: *What do you know about some of the possible risks of driving after using cannabis?*

Provide: *Sometimes folks are surprised when they learn that cannabis slows reaction time and coordination. These are really subtle effects, but they matter when something unpredictable happens (like a deer jumping out, a cyclist coming out of nowhere).*

Elicit*: What do you make of that info? How do you get around safely?*

Additional risk reduction

- For those who have children/youth in the home (parents, grandparents, etc.) talk with them about safe cannabis storage

Additional risk reduction

- Review protective strategies

Avoid use while spending time with family

Avoid using marijuana before work or school

Avoid using marijuana to cope with emotions such as sadness or depression

Use a designated driver (i.e., someone who has not used) after using marijuana

Do not keep marijuana in the car, whether as a driver or passenger

Avoid bringing marijuana into events or venues where you are likely to be searched

Limit use to weekends

Avoid driving a car after using

Avoid using marijuana habitually (that is, every day or multiple times a week)

Avoid using marijuana early in the day

Keep track of your costs to get an accurate picture of how much you spend on marijuana

Avoid using marijuana for several days in advance of a big test, interview, performance, or other engagement for which you need to be crisp and are being evaluated

Use a little and then wait to see how you feel before using more

Avoid buying marijuana

Avoid using marijuana if currently taking any kind of prescription drug that might intensify the effects (e.g., make you feel more tired)

Avoid mixing marijuana with other drugs

Only use at night (that is, not during the day)

Stop using marijuana if you become anxious or paranoid

Avoid using marijuana in public places

Pedersen, E. R., Hummer, J. F., Rinker, D. V., Traylor, Z. K., & Neighbors, C. (2016). Measuring Protective Behavioral Strategies for Marijuana Use Among Young Adults. *Journal of studies on alcohol and drugs*, *77*(3), 441–450. https://doi.org/10.15288/jsad.2016.77.441

Referrals for CUD Therapies

Treatment	Effectiveness	Confidence in Evidence
CBT	Medium	Moderate to high
MET	Medium	Moderate to high
Contingency Management	Medium (as adjunct)	Moderate (as adjunct)
CBT+MET	Medium	Moderate to high
Social support counselling	Unable to assess	Low
Drug education counselling	Unable to assess	Low
Relapse prevention	Unable to assess	Low
Mindfulness Meditation	Unable to assess	Low
Mutual help	Unable to assess	Low

Connor JP et al. Cannabis use and cannabis use disorder. Nature Reviews Disease Primers. 2021 Feb 25;7(1):1-24.

Gates PJ, Sabioni P, Copeland J, Le Foll B, Gowing L. Psychosocial interventions for cannabis use disorder. Cochrane Database Syst Rev. 2016;

Davis ML, Powers MB, Handelsman P, Medina JL, Zvolensky M, Smits JA. Behavioral therapies for treatment-seeking cannabis users: a meta-analysis of randomized controlled trials. Eval Health Prof. 2015

Medication treatments for CUD

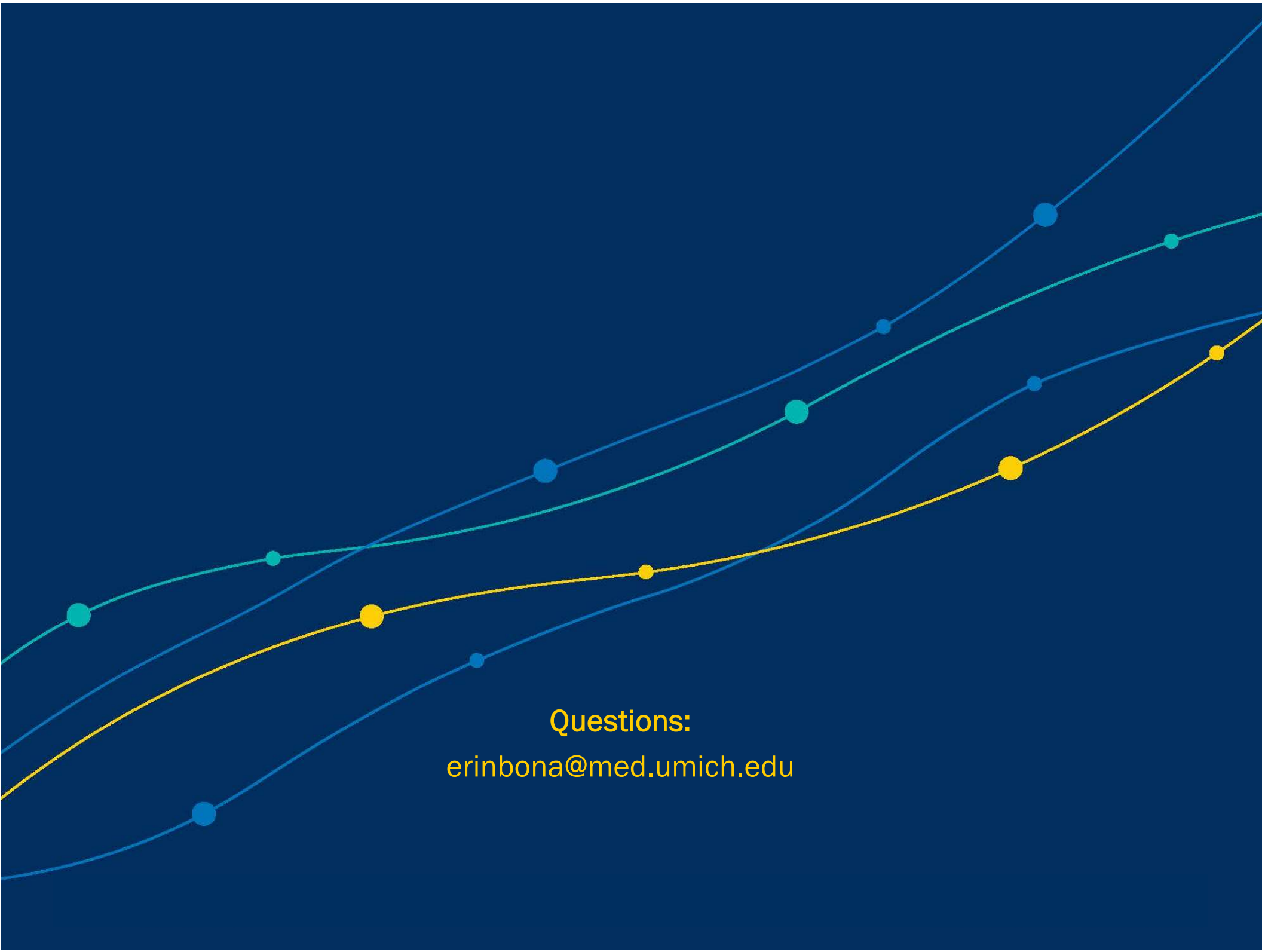
- Current data is limited; a 2019 systematic review showed incomplete and low quality evidence for medication treatments
- Suggested that antidepressants and anxiolytics have little value, except to treatment comorbid mental health
- Some THC-based formulations and anti-convulsants and mood stabilizers may show evidence for helping to manage withdrawal symptoms (54% in outpatient, 87% in inpatient, vs. 17% population)
- Concludes that psychological treatments have the best evidence for CUD

Nielsen S, Gowing L, Sabioni P, Le Foll B. Pharmacotherapies for cannabis dependence. Cochrane Database Syst Rev. 2019 Jan 28;1(1).

Bahji A, Stephenson C, Tyo R, Hawken ER, Seitz DP. Prevalence of Cannabis Withdrawal Symptoms Among People With Regular or Dependent Use of Cannabinoids: A Systematic Review and Meta-analysis. JAMA Netw Open. 2020 Apr 1;3(4).

Take home messages

- Cannabis use is increasing, potency is increasing
- More people than ever view cannabis as harmless
- We need to address risks and to be prepared to manage CUD in clinical settings
- Screening is necessary
- Recommendations for risk reduction exist
- The best treatments studied to date include CBT, MI/MET, and CM
  - The good news! These treatments are widely implemented in other areas and are known skill sets to many mental health/substance use clinicians
  - SAMHSA Treatment locator: https://www.samhsa.gov/find-help/national-helpline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